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September, 1965

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THE MACDONALD LASSIE

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Macdonald College

macdonald FARM *journal*

Serving Quebec's most affluent group of English-speaking farmers and their wives for over a quarter of a century.

Publisher
RONALD J. COOKE

VOLUME 26, No 9

SEPTEMBER 1965

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The Macdonald Farm Journal is published by Ronald J. Cooke Limited, also publishers of The Veterinary Products Reference. 58 Madsen Ave, Beaconsfield, P.Q. • Authorized as second class mail by the Post Office Department, Ottawa, and for payment of postage in cash. Price 25 cents per copy. Subscription rates are 2.00 per year; 3.50 for two years in Canada. U.S. and Foreign: \$4.00 per year. Address subscription renewals to Macdonald Farm Journal, 58 Madsen Ave., Beaconsfield, P.Q. OX. 72916.

OUR COVER: New large lecture room in the Soil Science building at Macdonald College is very busy at this time of year.



INSIDE

THE EDITOR'S COLUMN

A CAREER — IN AGRICULTURE

RURAL young people should carefully consider agriculture as a career. Agriculture is more than farming; it is big business; there is no wider field.

In the recent past and even today many persons think that agriculture means farming and farming means agriculture. This is not true. A person who chooses a career in agriculture may farm; but they also will be qualified to enter a wide variety of jobs. There is an unlimited demand for the student who is professionally trained in agriculture.

The student has a difficult choice to make when he or she chooses a career. It will affect their whole lives. It's good to hear there will be more career officers and teachers in our schools in the near future. Every student needs to know what careers are available.

Regardless of the career which is chosen extra years of formal education will provide dividends in satisfaction and in dollars and cents. Years ago this amount of education wasn't required to the extent it is today. One could say it's the kind of world we live in. "Technological Development" it's called. But it means we need more skilled workers and fewer unskilled. And skilled workers need more training. Changes in technology have rapidly taken place in agriculture. Agriculture as a profession must serve man by helping him grow, process, market and distribute food. The world is hungry, there is much to be done. We need highly trained persons.

Agriculture is Canada's biggest business. It employs 35 — 40% of the labour force either directly or indirectly. Less than 10% of the labour force are found on the farms. The remainder are in agri-business in a wide variety of careers. If the world is to be fed in the future, the necessary research must be carried out. New and improved methods of production, processing and marketing must be found. The next step is to encourage and assist the industry to adopt these methods. These are two very important tasks and thousands of persons are involved.

There are over 500 job titles in professional agriculture. They fall into 8 main groups. One is equally as important as the next. Research must find new crops and new varieties. Improved feed additives, insecticides, fertilizers etc. are needed. The search goes on endlessly for new and improved ways of doing things.

The ideas and findings of research workers must be funnelled out to those who can use them. This is the job of the extension worker. Agriculture Colleges teach new methods, vocational agriculture teachers help keep farmers, 4-H'ers and farm boys up to-date. To keep pace today's farmer must keep abreast of the latest practices and ideas in agriculture.

We still need good farmers and ranchers; competent men and women who will be the primary producers of the food we eat. They must be trained and skilled in their important profession. Technical Services are needed. Veterinarians, foresters, farm management; counsellors and credit advisors work in this phase of agriculture.

Without good communications, ideas would not be passed along. Farm radio, T.V. broadcasting, newspapers and magazines are involved in this process. We must safeguard our natural resources. This provides opportunities for persons trained in soil, water, forest management, park development and fish and wildlife management.

In the field of business we find banking, farm credit and custom services. In the processing business we find graders and packagers. There are many people involved in storing and distributing agricultural goods. Think of all the machinery, equipment, supplies and materials the farmer and the rest of the agricultural industry purchases and uses annually. To provide these goods and services qualified and trained young men and women are needed.

Within each of these fields there is a wide choice. If you have a farm or rural background you have an advantage. Use this advantage; capitalize on this knowledge. Agriculture is a fast moving and interesting profession. It offers many and varied opportunities. When you choose a career don't overlook agriculture.

Galen Driver

FARM FORUM

Yesterday — Today — Tomorrow

by Galen Driver

FOR TWENTY-FIVE years Farm Forum has served the rural areas of Québec. This organization originated in Eastern Canada; much of the early organizational work was done by the Staff of Macdonald College. From a few small groups this movement spread across Canada and around the world. Today new forums are being organized in Ghana, Nigeria, China and other countries in Asia and Africa. Canada is known as being the originator or founder of this program. Recently I heard of the interest in Farm Forum which exists among our friends in the United States. How and why did this movement start in Canada? Let's look at this program and review some of the happenings, yesterday, today and even venture a look into tomorrow's need for such a program.

Yesterday

In the late 1930's and early 1940's the rural scene was much different than it is today. The radio was new, it was a happy occasion for many of us when the first battery operated radio arrived in the home. The roads were not plowed during the winter months. Travel by horse and sleigh was accepted. There were more farms and farm homes, more people lived in the rural community. The evenings were long, the transportation was slow. The rural population along with the rest of Canada were slowly getting "back on their feet" following the great depression.

Suddenly there was a need. Canadian Farmers were asked to produce food for Britain. They needed to know about the markets, and other conditions. Farm Forum groups could meet locally, they were supplied with written study guides about current topics, they listened to the radio broadcast, talked about the problem and took the necessary action. These discussion groups became very important and popular in rural Canada, and rural Québec was no exception. The number of groups increased rapidly by the late 40's; 100 - 135 groups in Québec met every winter to Study — Listen — Discuss, farm problems. Over 1300 farm families joined this association. They held local and provincial meetings, they did things.

We should not forget the important social aspects of Farm Radio Forum. These weekly meetings among neighbours provided a wonderful opportunity to know your neighbour, to discuss social problems and to provide recreation

which was an important part of many meetings. These were bonus advantages of such an organization.

Today

There are fewer farms and fewer rural people. These persons are more sparsely scattered than twenty years ago. But they have much improved transportation. Everyone has an automobile, and almost every side road is plowed during the winter months. Communication has improved, radios are in every home, and most farm homes have a television set. The Farm Press provides farm information, communication has greatly improved. Today there is competition for the farmers' time, his evenings are taken up. There are meetings to attend and many things to do. The television set provides information and entertainment.

Transportation, specialization, and communication might be blamed for the decline in numbers and interest in National Farm Radio Forum. Whatever was the cause, interest in this program has steadily declined over the past ten years. This past year only 235 forums met regularly in all of Canada. This drop of interest has been so serious that last winter it was decided to dispense with the national office and that each province should set up its own provincial organization. The only national aspect now is that the Canadian Broadcasting Corporation will broadcast a National radio program for rural listeners, similar to Farm Forum.

The Directors of Québec Farm Radio Forum had foresight enough to study the needs of the English speaking Farmers in Québec. A committee worked during the winter months and made recommendations to the board of Directors. As a result of this study and report the Directors of Québec Farm Radio Forum and the Directors of the Québec Farmers' Association have agreed that the Québec Farmers' Association will assume the responsibilities previously held by Q.F.R.F. This will be subject to approval at their Annual Meeting in October.

Under the proposed organization the Québec Farmers' Association will work in 3 fields namely, education and information, policy and pressure groups. This program will be broad and flexible to cater to the needs of today's farmer.

Mr. Harris Shufelt of East Farnham, Québec was appointed Secretary-Manager of the Québec Farmers' Association in August. Mr. Shufelt's duties will



HARRIS SHUFELT

be to coordinate and implement the program as outlined by the Board of Directors. Mr. Shufelt has an agricultural background. He graduated from the Diploma course in agriculture at Macdonald College in 1963. Since that time he has been managing and operating his farm in East Farnham. Harris is interested in agriculture and is ready to assist and to build a strong organization.

With all these happenings new by-laws are required, the program must be expanded, meetings with local persons are necessary. This new program will be flexible and will be adapted as required to serve its members. Many of today's farmers need information to assist them in their business. There are other problems such as those who must adjust out of farming and into other professions. Agriculture is a rapidly changing field, those who stay with agriculture must be prepared to change with the times. And any association that will serve these people will also have to change with the times. The new Québec Farmers' Association will endeavour to fill this responsibility.

Tomorrow

There will be fewer farms, and fewer people living in rural communities. The farms will be scattered. The remaining farms will be highly specialized, mechanized and capitalized. Tomorrow's farmer will be a professional man, farming will be a business, not a way of life as it has in the past.

This businessman will require technical and management information as well as knowledge about marketing and finance and many other fields. The farmer of the future will no doubt demand services which he does not today, he must also be prepared to pay for these services.

Probably in 25 or 30 years the name of Farm Forum in Québec and in Canada will appear only in the records. However, Rural Canada has been the benefactor of this program. It has helped many. The reorganized Québec Farmers' Association is prepared to serve the English speaking Farmers in this Province. If they are successful they will need everyone's support. It is tomorrow's challenge.

BROILER BEEF

The production of barley or broiler beef from dairy animals in Britain was in the experimental stage four years ago. Now it has moved rapidly to a commercial scale both in Britain and in other parts of Europe. Dr. W. J. Pigden of the Animal Research Institute, Canada Department of Agriculture at Ottawa has recently returned from Europe where he was taking a close look at the production and marketing of this new product. Here are some of his observations as told to Peter Hamilton of Macdonald College in a recent interview.

WHAT IS BARLEY OR BROILER BEEF, DR. PIGDEN?

Barley beef is the production of finished beef carcasses from dairy-type animals from the feeding of very high concentrate rations throughout almost the complete growth cycle of the animal.

AT WHAT AGE DO THESE NOW GO TO MARKET?

They go to market at less than 12 months of age and at weights of between 800 and 900 lbs.

WHAT IS THE REAL ADVANTAGE OF THIS TYPE OF BEEF PRODUCTION?

It makes use of surplus dairy calves of which very large numbers in North America are slaughtered as baby beef each year and consequently are of very little value. Secondly, the complete production cycle is completed in less than a year; thirdly, you might say that no land is needed for this in so far as the actual production aspect is concerned-buildings only are required; fourthly, a very big advantage is the production of very lean carcasses with very little waste. Barley beef commands a premium price on the largest market in the world in London, England, — the Smithfield Market.

HOW DO THEY FEED THESE ANIMALS?

These animals are fed during the very early growth phase on high fat milk replacers, fed in liquid form. Then at

about four weeks of age and 150 lbs. by weight, they are switched to a high protein concentrate, and kept on a moderately high concentrate for the rest of the growing cycle. The original and the best known mixture is 85% barley and 15% protein mineral concentrate.

HOW MUCH ROUGHAGE DO THESE ANIMALS GET?

Many operators feed only the roughage which is contained in the barley hull; in other words they don't get any extra roughage, but generally it pays to feed small amount, one or two lbs. per animal per day, as a protection against certain metabolic disorders, such as bloat, kidney diseases and for other reasons.

WHAT SORT OF GAINS DO THESE PEOPLE GET?

During the early veal and transitional stage, two lbs. per animal per day at the 200 to 300 lbs. weight; at 500 lbs. weight they will get three lbs. gain per day; and near the end of the finishing phase, around 700 to 900 lbs. weight, they may get as much as five lbs. per animal per day.

ARE WE TALKING HERE ABOUT STRAIGHT DAIRY-BRED BULLS AND STEERS?

Yes. In this case we are referring to the British Friesian which is the equivalent to our Holstein. But there are other crosses — the Charolais-Ayrshire, Charolais-Guernsey and Charol-

ais-Jersey give very rapid gains at very high feed conversion ratios and produce very satisfactory beef.

IN OTHER WORDS, IF A MAN HASN'T HOLSTEIN, HE CAN STILL PRODUCE CALVES THAT ARE GOOD FOR BARLEY BEEF BY CROSSING TO A CHAROLAIS BULL.

Yes. But the Charolais is the only one that can be recommended for this purpose at the present time because the standard beef cross, such as Shorthorn, Hereford and so forth produce animals which are much slower finishing and produce over-fat carcasses, and are not generally suited for this type of production.

WHAT ABOUT HOUSING?

In Great Britain where the climate is relatively mild, most of this production has been carried out under makeshift conditions in sheds with deep-bedded floors, but the trend is towards a type of building with mechanical ventilation, slatted floors and semi-liquid manure disposal system. Even under their comparatively mild conditions, it is believed that an environmentally controlled type of housing is desirable.

DO YOU SEE THIS SITUATION WHICH YOU HAVE SEEN IN THE OLD COUNTRY APPLYING PRETTY WELL TO OUR SITUATION HERE?

We certainly should be looking into it as soon as possible. We need further research.



**At one year of age, these animals will
be ready for market at 800-900 pounds,
and may gain up to five pounds per day.**



Lean carcasses demand a premium rate.

Conservation Of Ground Water

WITHIN the ground beneath our cities, farms and public lands are the greatest reservoirs of fresh water on the continent. The total quantity of water in the Great Lakes — let alone the fraction of lake volume that is useable — is small compared to the volume of water in the ground.

C. S. Conover of the U.S. Geological Survey estimates that the total useable ground water in storage is of the order of 10 years annual precipitation or 35 years runoff.

When such large volumes exist why should we consider Conservation of Ground Water? Does Conservation of Ground Water mean not to use ground water? No. To conserve ground water means to use it wisely. In this case wisdom may be demonstrated by making recharge to the ground water reservoirs balance the withdrawals over a long period of time.

While the total water within ground water reservoirs is large, in many areas such as the Santa Cruz Valley, Arizona; the Los Angeles Coastal Plain, California; Mill Creek Valley, Cincinnati, Ohio; Pittsburgh, Pennsylvania average annual withdrawals have exceeded average annual recharge by painfully large amounts. In many parts of the continent no significant amount of precipitation gets beyond the depth of plant roots. Indeed it is estimated that 70% of our precipitation returns directly to the atmosphere as evaporation and transpiration. Before we get too inflamed about the atmosphere being first in line to quench her thirst and try to cut back her allowance, let us reflect that the 70% of our water taken directly back by the atmosphere, (and therefore unavailable to supply stream

To conserve ground water means to use it wisely. In this case, wisdom may be demonstrated by making recharge to the ground water reservoirs balance the withdrawals over a long period of time.

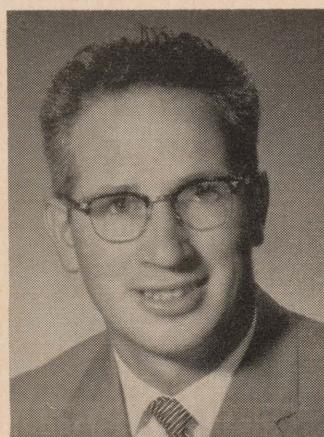
flow and replenish ground water) is the part which is most important to men. It is this part which sustains plant and animal life. Professor Bradley of Montana State College suggests that if man could live by bread alone at a ration of 2½ lbs per day his minimum daily requirement for water would be the 300 gallons needed to grow the 2½ lbs of wheat which produced his bread. When the water needed by the forages consumed to produce meat are totalled it may be shown that one pound of meat per day represents a consumption of 2900 gallons of water per day. When other water needs such as those of clothing crops like cotton and shelter crops such as timber are added we see that our subsistence costs in water are not the 100 gallons per day used in municipal water supply calculations but several thousand gallons per day per person.

We can see that any gains to water supply that might be obtained by reducing the atmosphere's grab of transpiration are likely to be short lived. Increases in population will need increases in production of food and fiber which will increase water needs for growth of plants. Indeed as Bradley suggests, large increases in population of North America may cause a significant cut back in the standard of living due to an insufficiency of water for the production of the items of food, clothing, shelter, and manufactured goods associated with a high standard of living. It will be more necessary to find ways of growing more food and fiber per unit of water transpired in order to feed and clothe the expected populations than to increase run off for power, navigation and industrial water. These sobering facts reaffirm our concern for conservation of water. Let us examine the common components of the ground water conservation equation. Discharge = Recharge for a basin, or

When over a long period the above is not an equality, the ground water reservoir is either being overdrawn or overcharged. Either of these conditions may require reservoir-wide action. The prevalent troublemaker is overdraft. Examples could be drawn from water problems in most states and provinces. As civilisation develops the tendency is to increase the use or discharge side of the equation. Overdrafts from ground water reservoirs are more subtle than from surface reservoirs as the total stored water may be enough to meet demands for several decades before becoming 'desert dry'. In some areas reservoirs will be emptied if no remedial action is taken; in others unuseable water will be drawn in to contaminate the reservoir. The concern of this article then is how to keep the use safe. That is, how to keep the equation balanced. If an overdraft already exists the solution lies in either increasing the recharge side or decreasing the discharge side, or both.

Achieving this solution is much more devious than the above sentence might indicate. Measurement of the various components over many years is difficult and expensive. Increasing the recharge side may be accomplished by importing water to the areas as direct relief for pumping; and by adding extra water to the reservoir by water spreading or well injection: as yet generally little can be done about increasing precipitation. In some areas runoff losses might be converted to ground water gains by improved infiltration capacity, but the root zone deficits must be replenished before any water can percolate to the main ground water reservoir.

Decrease of the discharge side can be accomplished by reducing water used by uneconomical or waste plants, eliminating part of the consumptive use, making more efficient use of the water in the non-consumptive phase of the



by Robert Broughton,
Dept. of Agricultural Engineering,
Macdonald College

$$\left. \begin{array}{l} \text{surface outflow} \\ + \text{subsurface outflow} \\ + \text{consumptive use in area} \\ + \text{exported water and sewage} \end{array} \right\} = \left\{ \begin{array}{l} \text{surface inflow} \\ + \text{subsurface inflow} \\ + \text{infiltration of precipitation} \\ + \text{imported water and sewage} \end{array} \right\}$$

discharge and thereby reduce the quantity exported from the area as waste. In artesian areas, water can be conserved by scaling walls and eliminating leaks from failed casings.

While it may be expensive to develop and recharge ground water reservoirs, it may be less expensive than establishing and operating surface reservoirs in some areas. The selection of ground water as a supply, rather than the surface sources, has generally been on account of one or more of the following advantages:

1. Ground water may be reached within a few hundred feet of where it is to be used, and on the same property, whereas surface water may require pipe lines and right-of-way over stretches of several miles.

2. Yield from wells and springs generally fluctuates less than streamflow, in alternating wet and dry periods.

3. Given a confined recharge area the evaporation losses from a ground water reservoir may be less than from surface reservoirs.

4. Land costs for surface reservoirs may be very high.

5. Ground water may be available for use in areas where the water in lakes and streams has already been appropriated by other users.

6. Ground water is more uniform in soluble mineral load and temperature than surface water, and is generally free of bacterial pollution and turbidity.

It is the recharge function that is usually critical in the operation of ground water reservoirs. Ground water development has largely been undertaken on an individual basis, and has required little organization. Recharge, however, is a procedure of a scope beyond the resources of the individual landowners — except perhaps in the case of return of air conditioning cooling water. Much additional organized effort on the recharge portion of the cycle will be necessary to keep the use safe. Here is where the legal features may enter in to assist. Undoubtedly alterations in water rights will be required. The sod has been broken, and there are many examples of organizations partially or fully solving their ground water problems by artificial recharge. The efforts of the Santa Clara County Water Conservation District in California, and the Nassau County Water Works Department in Long Island New York are good examples.

Generally speaking in an overall water use plan, surface storage is required to trap and desilt the large flows for later release at the inflow rate of the subsurface reservoir. The interests of power are often against ground water recharge, but flood control and water spreading activities can be made to coincide well. The area

serviced by surface and ground water reservoirs must overlap for utilization to the greatest extent to prepare for the long recurring droughts. The importance of application of recharge methods to local situations, even for small projects is not to be minimized.

Worked out gravel and sand pits, quarries, strip coal mines, and depressions left by excavations to obtain highway fill could be supplied with excess surface waters to become recharge areas. Vertical drains could be used to carry surface runoff through impervious subsoil layers to pervious ground water strata as is done extensively in Barbados.

Each situation requires individual study and investigation.

The political and legal implications of conjunctive operation of surface and subsurface reservoirs are great but not insurmountable. Legislation should recognize two universal principles:

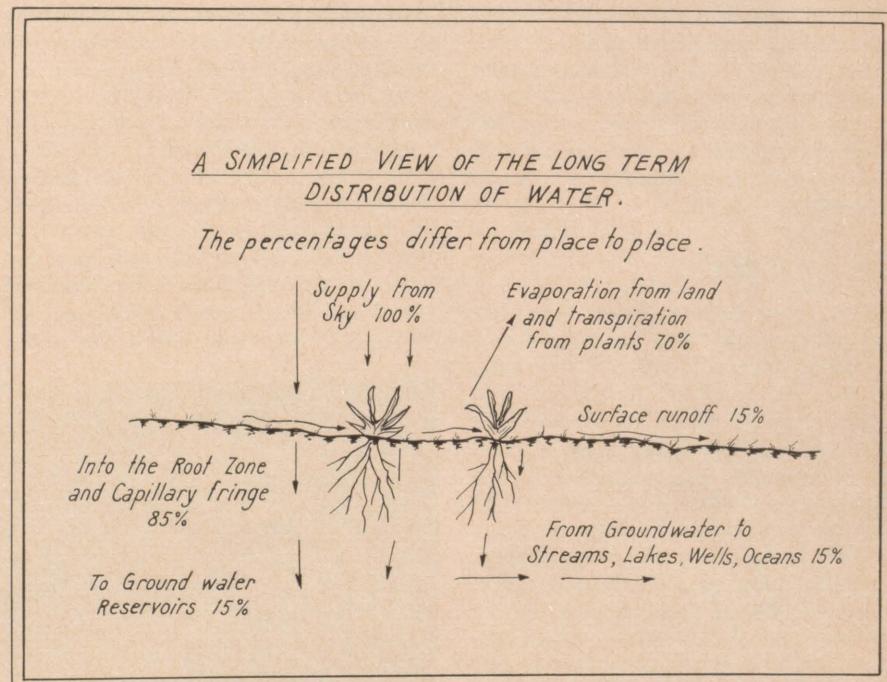
1. Any users may have the right of use, but that the water as such is public wealth and whoever does make use of it must release all that is left in a good condition that will not prevent further good uses while the water is in transit.

2. No law should so freeze water to any use, as to effect or confer a monopoly. An act for example directing that a minimum flow be allowed in a channel to maintain navigation may necessitate releasing water from a

bring suit against a neighbor for growing crops which reduced the recharge and hence hurt the supply to the prior appropriator.

Water Properties — Another area of legal troubles in connection with ground water use is that of rights and responsibilities in the physical and chemical properties of the water. Since many uses are not consumptive, or only partially consumptive, much of the water used has already been used and will be used again. The quality of the water is commonly changed by each use, that change usually being for the worse as far as the later users are concerned. If water is used for cooling, it becomes hot; if for sanitation, it becomes unsanitary; if for irrigation or industrial uses, it becomes contaminated by soluble or suspended materials. It is conceivable that water users may demand as their right not only a specific number of gallons of liquid, but water with certain specified requirements as to chemical and physical properties. Such a right should logically carry with it the obligation to discharge unconsumed waters with certain quality standards.

Cost of Obtaining Water — A water right is of no value if the water can be obtained only at prohibitive cost. The cost of obtaining water from some ground water reservoirs may be such as to limit development at considerably less than the full potential. It is



reservoir also serving irrigation and thus spell disasters to farmers.

Soil water may in the future become a matter of controversy. Changes in land use can effect considerably the amount of water that passes from soil water to ground water by percolation. Conceivably a prior appropriator could

for this reason that some hydrologists have included the stipulation that pumping lifts be 'economical' in their definition of 'safe yield'. But if written into the statutes and considered by the courts without the reservations of the technician when he uses the term, con-

(Continued on page 12)

SHEEP IN QUEBEC

by Galen Driver

There has been a steady decline in the sheep numbers in Quebec for years. In this article we will review this industry. We will consider its importance and its contribution to the agricultural output of Quebec. Just how extensive is this industry? We will consider some of the problems of sheep production in Quebec. Also some of the past government policies for the sheep industry will be reviewed and we will examine the present policies for this industry. We will try to point out some reasons why the industry has steadily declined and to make some suggestions for its future importance in agriculture in Quebec.

IN livestock sales in Quebec during 1960, the sale of sheep and lambs contributed 1.25% of the total sales from livestock or .3% of total farm income. This was \$1,200,380. plus another \$217,530 from the sale of wool. In 1961 there were sheep on 12,493 farms in Quebec. This was less than half the 27,516 farms which reported owning sheep in 1951.

Numbers of Farms Producing Sheep and Size of Flock (14)

All Farms reporting	1951	1956	1961
Numbers in Flock-			
1 — 7 sheep	27,516	24,625	12,493
8 — 17 sheep	10,567	8,145	3,604
18 — 47 sheep	11,847	10,140	5,175
48 — 77 sheep	4,844	5,912	3,334
78 — 177 sheep	165	327	277
178 or over	27	92	97
	3	9	11

The numbers of sheep and lambs marketed per year has drastically dropped since 1952. It is also shown that the number of sheep on the farms has been steadily dropping for the past 45 years. These trends continue, and the importance of the sheep industry in Quebec is dropping steadily.

SIZE OF FLOCK

From this data we can see what the situation is like on the farms producing sheep. The flocks are small. In 1961, out of 12,493 flocks, only 380 flocks reported 48 or more head per flock. This indicates that few farmers are relying on sheep as their primary source of income. Their volume of business is so small that sheep on many Quebec farms must be thought of as a second, third or fourth enterprise. There is little to indicate that during the ten year period which was illustrated that this trend is changing to any sizable degree, it is shifting slightly toward larger flocks. A lot of producers who had less than 10 sheep have left the business. They left the industry, they did not increase into larger unit.

COST OF PRODUCTION

There have been many estimates and

also actual studies completed concerning the profitability of sheep. Unfortunately these studies were not done in Quebec. I have reviewed studies in the United States and in Canada. The yearly profit per ewe has varied from minus \$4.80 in a study carried out in Maine in 1964 to a high of \$18.70 per ewe in a study completed in West Virginia in 1964. Although these are

not Canadian estimates, their conditions and prices were very comparable to those existing in Quebec.

In 1961, a study in Ontario was completed and reported average net returns of \$8.60 per ewe.

In 1952, the Economics Division of the Federal Department of Agriculture conducted a study on 99 farms in Nova Scotia. This was a poor year for sheep prices, only \$16.41 was received per lamb. They reported returns of \$2.58 per ewe when the lambs raised

per ewe was less than 0.8, \$8.60 per ewe when lambs raised per ewe was 0.8-1.0 and \$14.21 when more than 1.0 lamb was raised per ewe. Their average net return per ewe for the whole survey was \$7.87.

In a farm management exercise on Sheep Raising, in 1960 it was estimated the returns per ewe in Nova Scotia flocks would be \$11.00. This would be under better than average management practices.

MANAGEMENT

The main reason for the variation in returns per ewe can almost always be explained by the management practices. Management is very important in the flock. The shepherd must understand sheep and know how to handle them.

If properly equipped, the management is relatively simple and not time-consuming. At particular times of the year and for certain parts of a sheep program, the care and management are very critical to the success of the enterprise. The following are of particular importance in this respect.

- (a) lambing time
- (b) Breeding time
- (c) Growing and finishing the lamb, including castrating, docking, weaning and finishing.

The feeding of sheep centres around good quality grass crops, pasture, hay and silage. Good quality roughage is required if satisfactory returns are expected.

Culling and selecting is an important part of flock improvement. This program must be continually pursued so that worn out ewes are replaced by young ones. The use of good purebred rams is the basis of any system of breeding.

Parasites and diseases are responsible



Sheep are good converters of roughage.

for a large economic loss to the industry each year. Internal parasites can now be quite satisfactorily controlled using Thibenzole. The external parasites or sheep ticks must be controlled by annual treatment.

Housing, fencing and equipment need not be expensive for sheep. Open-type buildings which are dry and free from draughts are satisfactory. Fencing is usually considered the costly item in connection with establishing a sheep enterprise. Sheep must be well-fenced.

If sheep are to compete with other livestock in the farm, they must also have the same degree of management. Often the flock is small and considered a nuisance. It is then neglected and the returns are proportional, to the management practices on a particular farm.

RESEARCH

There is continuous research being carried out to help to sheep industry in this province. I will name some of the projects which have progressed and are usable at the present time.

(1) Disease control, internal and external parasites have caused heavy losses in the past. The new drug called Thibenzole is widely used to control worms in sheep and is very successful.

(2) A program by which sheep are kept confined for 12 mos. of the year has shown very satisfactory results. This avoids costly fencing and losses caused by dogs.

(3) Slatted floors are used and are proving successful.

(4) Artificial Insemination could be used, but is of little value until some system of proving rams is initiated so that only superior rams would be used.

(5) Multiple Lamb Births are important and can be increased. Multiple births are only 10% heritable, but knowledge of these factors are helpful; early-lambing ewes have more twins; temperatures above 90°F. interfere with fertility; and "flushed" ewes will produce a 10-20% lamb crop increase.

(6) Two crops of lambs per year would almost double the returns per ewe. This may be possible with better management practices and new technology, may expect better than one crop per year.

(7) Research in Sheep Crossbreeding has been completed at the Lennoxville Experimental Station. They have completed this project and the results of their 3-way cross are very promising. This involved the Oxford, Suffolk and North Country Cheviot breeds.

GOVERNMENT POLICIES

Government policy has been directed towards promoting sheep raising. Assistance falls into 4 categories (a) wool



OUR FUTURE?

(b) meat (c) transportation and (d) replacement stock.

(a) Wool — this federal government has placed a 60¢ floor price on wool. This policy is still in effect. The producer receives a direct subsidy payment to make up the difference between his selling price and 60¢ per pound.

(b) Meat — the federal government agrees to purchase lamb and to pay subsidies if prices fall below floor prices, e.g. 1961 — \$17.70 per 100 weight, \$18.80 in 1962 and \$18.00 in 1964-65. There is also a premium of \$2.00 for a Grade A and \$1.00 for a Grade B carcass. Recently the Quebec Government promised a \$3.00 premium on "Choice" and \$2.00 on "Good" carcasses.

(c) Transportation — the Quebec government assists in transportation charges in an effort to provide equal opportunity to farmers situated at considerable distances from the market.

(d) Replacement Stock — the Quebec government assists farmers by direct payment if they buy good rams. This payment varies from year to year and also as the quality of the ram.

The Quebec government has also assisted farmers to purchase cross-bred ewes. In some regions of Quebec this is used extensively.

SITUATION AND OUTLOOK

Canadian lamb supplies are relatively light. In the first seven weeks of 1965, gradings were almost one-quarter below the same period in 1964.

As a result of light supplies, lamb prices have been relatively strong, averaging \$24.88 per cwt in the week ending February 13, compared with

\$21.81 in the corresponding week last year. The cumulative national average from April 1, 1964 to February 13, 1965 was \$21.01 per cwt, close to \$2.00 per cwt above the corresponding period a year ago.

The D.B.S. December 1 survey indicated a reduction of five per cent in the number of mature sheep, indicating a smaller 1965 lamb crop as compared with last year. While it was first thought that the relative increase in the number of lambs on farms at December 1, 1964, as compared with a year previous, was due to increased numbers on feed, it now appears that most of these will be used as replacements. Lamb slaughter in 1965 may well run 7 to 10 per cent below 1964, resulting in an increase in the price of between \$1.00 and \$1.50 per cwt as compared with 1964.

Sheep numbers in Quebec will probably continue to decline, perhaps as much as 3 to 4 per cent. As a result both wool and meat prices will be slightly higher.

SUMMARY

- 1—The sheep industry in Quebec provides 1 1/4 % of livestock sales.
- 2—The numbers of sheep on farms and sheep marketing are steadily declining.
- 3—The number of sheep in most farm flocks is small, only 380 flocks have 98 head or over.
- 4—Prices are subsidized by the government and therefore steady.
- 5—Consumption of meats (lambs & sheep) is rapidly increasing in Quebec and the production is falling at the same time.
- 6—Net Returns per ewe in most flocks is estimated at \$10.00.
- 7—Many flocks are small and poorly

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SHEEP IN QUEBEC

(Continued)

- managed. This results in low returns.
8—Practical research has provided enough information so that this could be a profitable enterprise if the knowledge is applied.
9—The outlook is good, prices will be firm to higher in the immediate future.

CONCLUSIONS

- 1—Under our system of farming, sheep must compete with cattle and hogs and poultry for land use and costs of labour. Under these conditions sheep as presently managed cannot successfully compete.
2—The size of flocks on Quebec farms is so small that they cannot operate efficiently.
3—If sheep are to compete with other livestock farm owners will have to give sheep as much attention and importance as other livestock found on the farm.
4—Existing management practices and information are adequate to establish a profitable sheep industry in Quebec.
5—An educational program is required so that farm operators realize the problems of sheep production.
6—The market is available and the market price is subsidized by the government. Therefore some of the risk is removed.
7—The money to establish a sheep flock is not great. A sheep operation could be established on some farms which may be too small for other livestock.
8—Land and buildings are available on the Quebec Farms.
9—The sheep industry will continue to decline in Quebec unless there is a major promotional program carried out by governments and extension services and the sheep farmers themselves.

CONSERVATION OF WATER

(Continued)

fusion is almost certain to result. The 'safe yield' — "an ALICE-IN-WONDERLAND term" — will vary widely depending upon the stipulations that govern the determination.

It is generally true that the first water appropriated, in a region of ground water development, is the most accessible and least expensive. As more water is appropriated, the cost increases. The interests of the individual early appropriators, who are put to greater expense by lowering water lev-

els, are thus in conflict with the interests of the state or community who desire to make the fullest practical use of the ground water resource.

Where rights are based on appropriation, the regulation of ground water draft is not as simple as regulation surface water draft in order of priority. As the flow in a surface stream reduces there is water available for fewer and fewer junior appropriators. Due to the large storage in most ground water reservoirs — which may have taken centuries to accumulate — there generally is water for junior appropriators, even when the draft by senior appropriators exceeds the rate of replenishment.

For effective regulation of ground water draft, so as to give a large number of appropriators fairly constant quantities from year to year, it is essential to know the reservoir's capacity for sustained yield. But with the difficulties of interpretation and determination of "safe yield", it is very easy to become pessimistic and say: these water problems are getting too complicated for human solution; who are we to judge? Let foolish development go on until nature does the judging. But if we are to be worthy of the term civilized, we will face up to the problems vigorously realizing that the problems will be complex and will not let things ride until expediency forces a half-baked solution, but will strive for a workable marriage between the legal and the hydrological with the realization that the courtship may be laborious.

Much of the content of the above article was presented at the third Symposium on Water levels in Montreal on June 14, 1965.

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THE FAMILY FARM

PUBLISHED IN THE INTERESTS OF THE FARMERS OF THE PROVINCE

BY THE

QUEBEC DEPARTMENT OF AGRICULTURE AND COLONIZATION

Compiled by T. Pickup of the Information and Research Service,
Quebec Department of Agriculture and Colonization.

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PHOTOGRAPHS BY
OMER BEAUDOIN



Picking apples in the orchard of Louis Bideau at St-Eugene, Drummond County.

New Approach To Apple Growing

A new approach to apple production offers promise of bigger yields from trees that remain "young" and in prime bearing condition far beyond their normal span.

The system involves a new, simplified method of pruning that encourages renewal of fruit-bearing wood and which promotes apple growth on all branches of a tree, reports Dr. A.D. Crowe, of CDA's Research Station at Kentville.

As orchardists are aware, apples grow best on a young tree which, once the frame branches have become established, requires little pruning. All branches benefit from sunlight and bear fruit. When it becomes older and exceeds 12 to 15 feet in spread and height, however, it must be pruned to

allow light to reach the interior branches.

So far, ways and means of retaining the advantages of young trees have centered on planting new orchards and on the use of rootstocks which will keep the trees from growing too big.

Neither of these may be necessary, says Dr. Crowe.

He says another approach is to plant trees close together (between 12 and 15 feet) and cut off any branch that becomes too long or too high. Annual pruning is simply a matter of removing one to three of the longest branches.

"It's simple, quick and very effective and there is no thinning out or heading

(Continued on page 17)

ORGANIC NITROGEN IN SOILS

by F. J. Sowden

Dr. Sowden is an organic chemist with the Soil Research Institute, Ottawa, Ont.

The fertility of the soil depends, to a large degree, on its supply of available nitrogen. In most soils, the amount of readily available nitrogen is quite small and is present largely as nitrate and exchangeable ammonia. Most of the reserve supply of nitrogen of a soil is held in various types of organic compounds. This reserve supply is decomposed slowly by microorganisms to become the major source of the nitrogen available to plants (other than that added as fertilizer or fixed from atmospheric nitrogen by microorganism). The primary source of most of the organic nitrogen of soils is undoubtedly plant and animal residues and this nitrogen when originally added to the soil was largely protein. However, free protein would be rapidly decomposed in soil and it was thought at one time that most of the soil nitrogen was combined as a lignin-protein complex. As more information has accumulated this idea has been modified or abandoned.

From a practical point of view, we could perhaps manage the soil nitrogen better if we knew more about the chemistry and biochemistry of the materials with which we are working, and an improved knowledge of the chemistry of the organic nitrogen of the soil would improve our understanding of the soil system. For this reason we in the Soil Research Institute have been making a fairly intensive study of the nature of the soil nitrogen. Modern micro and semimicro methods make this work possible since relatively small amounts of soil can be used and the methods are much faster. These methods are, for the most part, adopted from protein chemistry.

By treating the soil with acid, we can divide the total nitrogen into four groups: the insoluble nitrogen fraction, amino acid, amino sugar, and ammonia nitrogen. In this way a fair idea of the general nitrogen distribution can be obtained. We have found that in general the amino acids in soil are the same as those found in an 'average' protein. The amino acid distribution,

that is the ratio of one amino acid to another, is also similar to that of a normal protein. Quite small amounts of some 'non-protein' amino acids are sometimes found. There is a difference however, in the ratio of amino acid nitrogen to total nitrogen found in different soils; this varies from a high of about 60 per cent in some soils to a low of 25 per cent in others. In general, the more decomposed the material the lower the percentage of amino acids; for instance, it is higher in the A horizon than in the B.

The ammonia nitrogen in these hydrolyzates increases as the proportion of amino acid nitrogen decreases. The amino sugars usually contain 5-10 per cent of the total nitrogen; this percentage often increases during decomposing of organic matter and in some instances with depth in the profile. Glucosamine and galactosamine are the only amino sugars that have been identified in soil hydrolyzates; the ratio of glucosamine to galactosamine varied from 1.6:1 to 4:1. The higher ratios were found where one would expect to find a higher proportion of fungi relative to bacteria. The amino sugars are probably synthesized by microorganisms; they occur in the polysaccharides formed by bacteria and in bacterial cell walls. Chitin, which is found in many fungi, is a polymer of glucosamine.

We have also made some preliminary investigations to see how the amino acids are combined in soil and have found that at least a fair proportion of them are combined through peptide bonds as they are in protein. The amounts of free amino acids in soils are very small and would account for much less than 1 per cent of the total. This amount increases on freezing the soil. If the soil is extracted with an organic solvent (like carbon tetrachloride) before or during the extraction of the free amino acids there may be a 25-100 fold increase in the amount of amino acids extracted (but still less than 1 per cent of the total). The freezing of the soil (and the organic solvent) may rupture microbial cells and thus release some amino acid material. These free amino acids may be readily available to microorganisms for conversion to ammonia and nitrate.

From a practical point of view, one of the more important problems is to devise a reliable and simple test to measure the nitrogen-supplying power of the soil that could be used in assessing fertilizer requirements. The most frequently used, and probably the best, method is to measure the ability of the soil to form nitrate under carefully controlled conditions. The chief fault of this test is that it is time-consuming. Some more rapid chemical tests have been devised but they are not very satisfactory. The reasons for this are fairly obvious; we still know very little as to how the ammonia, amino acids and amino sugars are combined in the soil and if one assumes, as the evidence now available suggests, that the ammonia and amino acid nitrogen is the ultimate source of much of the available nitrogen, the question is still not solved. An average soil containing 0.2% total nitrogen would contain 2,000 lb. per acre of amino acid and ammonia nitrogen; obviously most of this is not available in any one season. The proportion available would depend on the rate of breakdown by microorganisms, the amount utilized by the microorganisms themselves, and ammonification and nitrification rates. Each of these processes depend on soil temperature, moisture and aeration — to name some of the factors. Obviously devising a simple chemical method to measure nitrogen availability is no easy task.

We are trying to devise simpler methods to measure the nitrogen distribution in soils and to see if indeed the ammonia and amino acid nitrogen is the source of most of the available soil nitrogen. We are also continuing our studies of how the ammonia and amino compounds are combined in soils. This should aid in our understanding of the soil system and (hopefully) some fractions might be found that are the source of at least a significant part of the available nitrogen.

This page supplied in the interests of the Family Farm by the Quebec Department of Agriculture and Colonization.



The apple-juice factory of the Coopérative Montérégienne at Rougemont, Rouville County.

HOME MADE CIDER

Recipe for dry, non-sparkling cider

Beginners should not try to make more than ten gallons of cider at the first attempt. The equipment needed includes: a ten-gallon, oaken cask or barrel; bottles of a very dark colour; five or six feet of rubber tubing; and a bottle-corking device. All this equipment must be kept very clean. Sulphur the cask before putting in the apple-juice. Since cider-presses are very expensive, those who make cider on a small scale will find it cheaper to buy **unpasteurized** apple-juice from apple-growers who own presses. Such growers are easy to find in all the apple-growing districts of Quebec, for example among members of the Cooperative Montérégienne at Rougemont. Good results are obtained with juice from a mixture of apples in which three quarters of them are McIntosh, Fameuse, or Russet and one quarter are of a more acid type, such as "wild" apples or "seedlings". It will take twelve gallons of juice to make ten gallons of cider.

Lay the cask on a barrel-stand or support in the basement and put ten gallons of juice into it by siphoning through a tube. Never use a metal funnel; air and iron are enemies of cider. Keep the remaining two gallons of juice in a cool place in dark-coloured glass containers; it will be needed for filling-up to compensate for losses due to evaporation and formation of lees or dregs at the bottom of the cask. Cover the bung with a cap made of clean paper and leave the juice to ferment.

The time required for fermentation varies because it depends on the temperature of the basement and other factors. At a very high temperature, fermentation may be finished in a month. If the basement is very cool, it will take much longer. But the slower

the fermentation, the better the cider. However, the temperature should not be below 45°F otherwise fermentation will cease altogether.

About 24 hours after the juice has been put in the cask, a process known as turbulent fermentation or clarification takes place. All the time this is going on, the whitish column of froth which will form above the bung must be removed twice a day and the cask filled up with juice from your reserve. Each time this is done, wash those parts of the cask and its stand where any overflow may have trickled down. After the turbulent fermentation is ended, continue to fill up the cask, at first once a day and then two or three times a week. It is sometimes a good thing to draw off tappings during fermentation, but this operation is not absolutely necessary and may even put a stop to fermentation in the case of some varieties of apples. Generally speaking, fermentation may be allowed to proceed without interference from tapping.

The cider is finished when all the sugar in the juice has been changed into alcohol. It is possible to tell when this has happened by the taste, but it is better to use a hydrometer. Put the instrument in the liquid. If it indicates that the density has reached 1.000, the cider is finished. Bottle it without disturbing the dregs and place the bottles, lying down, in a quite cool, dark place. You will then have a finished, dry, non-sparkling cider, especially good for the table. Its alcohol content will depend on the amount of sugar in the juice. The combination of varieties mentioned above gives a cider testing between 6 and 7 per cent of alcohol. This is enough for the cider to keep satisfactorily under cool conditions for quite a long time.

To obtain a cider that contains more alcohol and will keep more surely and longer, sugar must be added to the juice. The addition of one pound of cane sugar per gallon of juice will increase the alcohol content of the finished cider by 5.8%. If sugar were added at this rate to juice from the above-mentioned mixture of apples, the cider would contain about 12% of alcohol. To add the sugar, dissolve, with heating, 10 pounds of sugar in a gallon of water in an enamelled container (not in cast or tin-plated iron) and add it to the juice. Then put the juice into the cask. Use unsweetened juice for topping-up the cask. For the remainder of the process, follow the directions already given.

Recipe for sparkling cider

This recipe is as simple as the one for non-sparkling cider, but a hydrometer is needed to keep track of the fermentation process and decide the proper time for bottling. When the hydrometer, placed in the liquid, indicates a density of 1.018 to 1.020, bottle by means of siphoning, taking care not to disturb the dregs at the bottom of the cask. Use very dark-coloured champagne bottles and No. 10 corks. Wire the corks securely. Lay the bottles down in a dark, cool place. The fermentation process will continue in the bottles. Its duration will depend on the temperature of the room. Open one of the bottles after about three or four months. If the cider is not yet sparkling, it will become so later. Be patient and wait; the results will be worth it.

As soon as the cider-making is over, wash the cask well and keep it very clean; you are sure to want to make cider again next year.

Take care to keep the bottle sloping and do not disturb the least when filling glasses. Serve in champagne cups. Good, sparkling, Quebec cider can hold its own, as regards taste and appearance, with many sparkling wines from elsewhere.

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A field of Garry oats on the farm of Omer Ménard of Thuro, Papineau County.



Field Crops, 1964 . . .

AREA, PRODUCTION AND VALUE

The Agriculture Section of the Quebec Bureau of Statistics publishes an estimate of the production of the principal field crops in the Province of Quebec, for 1964.

It should be borne in mind, in interpreting this report, that the estimate of the value does not represent the cash income from sales but the gross farm value. Several crops, such as mixed grains and fodder corn, are almost entirely consumed on the farms where they are produced. The average prices of these crops, determined by the very small quantities sold, are applied to the total production of each crop and represent the gross value. Although they add very little to cash income, these crops increase the gross value of the field crops.

Summary

In 1964, the area under field crops was 4,928,162 acres as compared with 4,926,974 acres in 1963, a slight increase of 0.02 per cent.

Production of wheat, oats, barley, flaxseed, mixed grains, dry peas, dry beans, fodder corn and sugar beets was heavier in 1964 than in 1963, the other field crops showed a lower yield.

The larger wheat crop in 1964 was due to an increase of the area under cultivation; the yield per acre was the

same as in 1963. As regards flaxseed, mixed grains, dry peas, dry beans and sugar beets, the heavier crops for 1964 were due to both a larger area under cultivation and a better yield per acre. In spite of a decline in areas in oats and barley, these crops showed increases on account of a higher average yield per acre. Rye, buckwheat, field-roots and potatoes showed decreases in production in 1964 on account of a drop in the cultivated area which an increased average yield per acre could not compensate. Insofar as tame hay and fodder corn are concerned, the lower crops registered in 1964 were due to a drop in the average yield per acre which was not compensated by an increase in the area under cultivation.

The final estimate of the value of field crops for the 1963-1964 crop year is \$173,959,000 compared to \$180,127,000 for 1962-1963, or a decrease of 3.4 per cent.

WHEAT: The wheat crop for 1964 is estimated at 283,000 bushels as compared with 216,000 in 1963, an increase of 31.0 per cent. The 1963 production is valued at \$367,000 representing an average price of \$1.70 per bushel and taking into account the average price received by farmers for the whole 1963-1964 crop year.

OATS: Estimated at 47,597,000 bushels in 1964, the oat crop shows an

increase of 4.5 per cent over the 45,539,000 bushels of 1963. The 1963 production is evaluated at \$39,164,000 for an average price of \$0.86 per bushel.

BARLEY: The 1964 barley crop is estimated at 506,000 bushels and represents an increase of 9.0 per cent over the 464,000 bushels of 1963. The value of the 1963 production is estimated at \$543,000 with an average price of \$1.17 per bushel.

RYE: The rye crop for 1964, estimated at 55,000 bushels, is 21.4 per cent less than the 70,000 bushels of 1963 which were valued at \$80,000 or \$1.15 per unit.

MIXED GRAINS: Estimated at 3,768,000 bushels, the mixed grain production for 1964 shows an increase of 8.3 per cent over the 1963 crop of 3,479,000 bushels. The value of this crop in 1963, was \$3,896,000, an average price of \$1.12 per unit.

BUCKWHEAT: 355,000 bushels of buckwheat were harvested in 1964, representing a decrease of 8.7 per cent from last year 389,000 bushels valued at \$459,000 or \$1.18 per bushel.

DRY PEAS: The 53,000 bushels of dry peas yielded in 1964 represent an increase of 12.8 per cent over the 47,000 bushels of 1963, which were

(Continued on page 17)

LYSINE

Micrococcus glutamicus first achieved fame in the 1950s when Japanese scientists discovered how to use cultures of the organism to manufacture glutamic acid, the amino acid whose monosodium salt is now used extensively as a flavouring agent in the food industry.

Further research in Japan led to the isolation of five mutant strains of **M. glutamicus** capable of producing copious quantities of another amino acid—lysine—important because it is an essential dietary constituent for man and for farm livestock.

Lysine, though comparatively abundant in animal protein, occurs only in small amounts in vegetable protein. The possibility of using factory-made lysine to supplement diets based largely on vegetable materials is, therefore, attractive, especially where alternative sources such as meat or fishmeal are expensive or scarce.

In developing an efficient microbiological method of lysine manufacture, the aim is to encourage the fermentation system — **M. glutamicus** plus culture medium — to produce as much lysine as possible while suppressing the formation of other amino acids that these organisms also produce. One of the original Japanese mutants proved to be an outstanding lysine-producer in biotin-rich media. By adjusting the composition of the growth medium, the Japanese boosted its output to about 17 grammes per litre of lysine after five days' fermentation in experimental cultures. Lysine is now produced commercially by this technique in the United States and France as well as Japan.

Recently even more potent strains of **M. glutamicus** have been developed by a team of Russian scientists under the direction of Dr Alikhanyan. The Russians irradiated the micro-organisms with fast neutrons and treated them with various (unspecified) chemicals. The mutants thus obtained have given yields of 25 g/l lysine in 48 hours. They are now being used to produce lysine in kilogramme quantities in a pilot plant at the Kurchatov Institute of Atomic Energy where a larger unit with an annual output of several tons is under construction. The product is being used to fortify pig and poultry food.

Before long, lysine produced by bacterial fermentation will meet competition from lysine manufactured by a purely chemical route starting from caprolactam (an intermediate in nylon manufacture). The Dutch State Mines, whose semi-scale plant has been in operation for some time, expect to start full-scale production within the next 12 months. Livestock feedstuff

manufacturers and other potential users of lysine are keenly interested to know what the selling price of this synthetic lysine will be.

When plans for full-scale production were announced four years ago the Dutch were confident that chemical synthesis would prove more economic than microbiological production — at then in use.

(From "New Scientist", March 25th, 1965.)



USE OF 8-16-8 COMMERCIAL FERTILIZER

The Department of Agriculture and Colonization wishes to remind Quebec potato growers that 8-18-8 commercial fertilizer is particularly suited to Saint-André and Saint-Bruno loam soils, that is to say soils that cover a large area in the Lower St. Lawrence region. This recommendation is based on two series of experiments carried out over a period of eight years at Saint-Roch in L'Islet County and at Saint-Bruno, Kamouraska. In other regions, soil analysis should be used to decide whether this formula (8-16-8) is to be recommended. At present, however, fertilizer having this formula is not yet eligible for the grant for the purchase of commercial fertilizer offered by the Department.

FIELD CROPS

(Continued)

estimated at \$3.75 per bushel for a gross value of \$176,000.

DRY BEANS: The 19,000 bushels of dry beans harvested in 1964 are 6,000 more than last year, an increase of 46.2 per cent. The 13,000 bushels yielded in 1963 were valued at \$57,000 or an average price of \$4.40 per unit.

POTATOES: The potato crop amounted to 8,208,000 cwt. in 1964 and was 1.4 per cent less than the estimated 8,364,000 cwt. of 1963. The gross value of the 1963 crop was \$15,473,000 or \$1.85 per cwt.

TAME HAY: The 6,178,000 tons of tame hay produced in 1964 represent a drop of 3.2 per cent from the 1963 crop which stood at 6,380,000 tons. The gross value of this crop in 1963 is

estimated at \$102,080,000 or \$16.00 per ton.

FODDER CORN: Estimated at 636,000 tons in 1964, the fodder corn crop shows an increase of 3.4 per cent over the 615,000 tons of 1963. The 1963 production is valued at \$3,782,000 or \$6.15 per ton.

FIELD-ROOTS: The 1964 field-root crop at 44,000 tons, was down by 6.4 per cent as compared to the 47,000 tons of 1963. The 1963 crop is valued at \$893,000 or \$19.00 per ton.

SUGAR BEETS: In 1964, the sugar beet production totalled 150,000 tons, 33.6 per cent more than last year, when output reached 113,000 tons valued at \$1,803,000.

TOBACCO: The production of all types of tobacco is estimated at 9,919,000 pounds in 1964, a decline of 7.0 per cent compared to the 10,669,000 pounds in 1963. The gross value of tobacco produced in 1963 is estimated at \$3,980,000.

FLAXSEED: The 1964 crop of flaxseed is estimated at 511,000 bushels as against 394,000 bushels in 1963. The 1963 production is valued at \$1,206,000 or \$3.06 per bushel.

This page supplied in the interests of the Family Farm by the Quebec Department of Agriculture and Colonization.

APPLE GROWING

(Continued)

back required," says the researcher.

But, he warns, don't cut off the smaller shoots or branches. It is from these shoots that new branches develop.

The technique not only speeds and simplifies pruning but, because the size of the tree is kept in check, it permits closer planting of trees for most effective use of land and machinery. Continual replacement of branches in this manner keeps the tree young and vigorous, producing high yields of excellent quality fruit. And because the trunk is the only part that can get old, a grower does not have to plant a new orchard every few years.

Dr. Crowe points to European orchards that are pruned in great detail to a rigorously defined system. Many of them produce good yields of quality fruit after 70 or more years. Although the trunks and possibly some of the frame branches are old, the wood which actually bears the fruit is kept young through a renewal system of pruning.

The intricate system used in Europe

(Continued on page 21)

THE MONTH WITH THE W.I.

WEAR YOUR W.I. PIN — on every possible occasion, not just to W.I. meetings : — it's GOOD PUBLICITY !

Many branches indicate that delegates to County Conventions, and to the Annual Provincial Convention, have done an excellent job of reporting main events and business to their branches. This is one of the best ways to keep our membership informed of WI progress, and delegates are to be congratulated on their interesting talks.

Members who attended the Leadership Course in May, enjoyed the experience immensely, and are now sharing it with their own and with other branches. Be sure to invite these delegates to your branch meeting so they may pass on to you some of the many things learned.

BONAVVENTURE : BLACK CAPE heard an article on Salt and its Uses; contest on words beginning with "May". MARCIL welcomed a new member; presented school prizes.

BROME : ABERCORN named an easy supper dish for a hot night; held quiz contest on cakes. AUSTIN held tea and bake sale for benefit of Library; were pleased to received a third prize for Convention Handicraft item; collected Pennies for Friendship according to waist measurement of each member. KNOWLTON'S LANDING held picnic meeting at the cottage of Mrs. MacDuff; gave kitchen shower to a bride. SOUTH BOLTON enjoyed a tour of the Plastic Factory in Mansonville conducted by Mrs. F. Korman and Mrs. M. Magoon; won 1st prize for skirt at Convention Handicraft exhibition.

CHATEAUGUAY-HUNTINGDON : HEMMINGFORD heard a talk by Mr. A. MacNaughton on the "Royal Family Lineage"; entertained Ormstown Branch; named a favourite vacation spot as roll call. HOWICK : Mr. Jacobsen of "Little Denmark Flower Shop" gave interesting flower arrangement of bouquets and corsages; held baked-shell pie contest; in cooperation with the Council, the Institute has been instrumental in beautifying the flag-pole plot in the village by planting salvia. HUNTINGDON's meeting was a picnic at summer home of one of the members at Port-Lewis where pot-luck dinner was enjoyed; discussed etiquette for flying Canada's new flag; heard article on ICU — intensive care units being used in many hospitals; purchased gift for resident who lost her home by fire;

answered roll call by naming a native tree. ORMSTOWN members each gave 3-minute talk on topics drawn and enjoyed the impromptu speeches; assistance to school for retarded children.

GATINEAU : EARDLEY heard reading by Mrs. S. Wilson entitled "Will the Meeting Please Come to Order"; reading by Mrs. U. Curleyon Good Citizenship; quilt made by members to raise money for local disaster fund and other WI work.

KAZABAZUA held successful Rummage sale.

MEGANTIC : Two members have completed the History of their branch at INVERNESS, up to 1965; KINNEAR'S MILLS welcomed a new member and several special guests; planned school fair.

MISSISQUOI : COWANSVILLE : two newspaper articles were read, one written by a WI leader in England, one an interview with Mrs. Ossington; both leaders asked for a broader concept of the purpose of the WI, towards community, political and welfare work; each member described current event. DUNHAM raised their new Canadian Flag at this meeting; celebrated a member's birthday; each member gave interesting facts about her own farm or home. STANBRIDGE EAST : Each member brought her baby picture for a guessing contest; also gave the name of her first ancestor to settle in Canada and told about him; decided to hold weekly food sales in Cornell Mill Museum.

PAPINEAU : LOCHABER welcomed a new member; held successful bake sale.

PONTIAC : BRISTOL heard poem written by President of FWIC; held a name-the-person contest; served refreshments at an Auction Sale; collected used clothing for Red Cross. CLARENDRON donated drapes for sun-room at local hospital. QUYON saw slides and heard interesting talk on Ireland; went on a trip through the Bell Telephone Building in Ottawa; held sewing course with many articles made; held euchre party; contest on guessing the contents of a box. SHAWVILLE: each member read a by-law of the WI from the Handbook; paid 1c for each year of membership in the WI.; played "It's your move". WYMAN heard reading called the "Un-automated Moon", held a sentence building contest, and a drawing contest.

RICHMOND : DENNISON'S MILLS held contest "Who Attended the Wedding"? GORE sent gift to new baby. MELBOURNE RIDGE sent two In Memoriam donations to Dixville Home for Retarded Children; held sale of remnants; planned begonia contest as part of projected August School Fair. RICHMOND HILL made plans to make two more tables for use at suppers in their hall; held jumbled word contest on Things Found on the Farm. SHIPTON held contest on corsages made from wild flowers, with judging done by a guest, Mrs. I. Brock. SPOONER POND heard excellent report of the Leadership Course, by Mrs. G. Johnston, member of Melbourne Ridge, who attended the course; sunshine basket and a plant sent to shut-ins; gave gift to new baby of a member; special collection for Pennies for Friendship.

ROUYN-NORANDA : NORANDA followed through with their Library Card plans, and presented these to 20 students in 3 elementary schools — this to be a continuing project; held surprise party at a local restaurant for Mrs. Pauline Willis, vice-president of the Branch, and County Treasurer who is leaving to live in Toronto — she was presented with a corsage and appropriate going-away gift. Noranda members were invited to attend the ROUYN regular meeting at which the guest speaker was Mrs Cecile B. Stafford. Mrs. Stafford gave most informative talk on the Parent Commission report and the many important changes in education which are embodied in Bill 60; she will spend the summer visiting eight European countries studying school systems for the Board of Education.

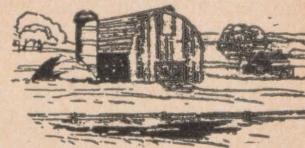
SHERBROOKE : ASCOT held meeting at Grace Christian Home for Elderly at Huntingville, served them lunch and chatted; several visitors were present. BELVEDERE displayed a beautiful appliqued quilt; held bake sale, a rummage sale and a card party, all three events being most successful.

BROMTON RD : held discussion on Operation 55-Regional Schools; each grandmother honoured with a pin and corsage; one member became a grandmother after her arrival at the meeting. LENNOXVILLE entertained two branches from another county; articles read on Floor Finishes, and on the Mother of the Year; each member told of an event in town or County, or of some person.



The Better Impulse

NEWS AND VIEWS OF THE
WOMEN'S INSTITUTES OF QUEBEC



by Norma E. Holmes

Dear Min :

SCHOOL — and Jackie is away now for the day and the school janitor (I suppose) has to cope with the washing problem. I saw this in the Irish WI magazine :

"We used to wash his hands for him, But now that he's not so small, He scrubs his own, unhelped, while we Just wash the sink, the soap, the wall."

Wendy, of course, didn't see why she wasn't old enough and big enough to go too. And, do you know, when I was teaching in a 'company school', I actually had a child her age. There were only 10 children in the place and with 9 in school she had no one to play with.

I had her little brother Donald the year before — 4½, and his cousin all of 5, and they just breezed through the first grade. But sometimes school was just too, too much for Donald. One day he stared at me solemnly right through a long explanation to another class and then he observed, "You make me tired."

That was also where I learned that a rapt expression of listening can conceal who knows what thoughts. I used to tell them bible stories and one morning it was Moses in the bulrushes. It happened that in a nearby town (nearby meaning 30 miles) there was a hotel called the Palace. So this is the version of Moses in the bulrushes Donald gave his mother. "Moses mother put him in a box in the river and the princess found him and took him to live in the hotel, but when he got into a fight and they kicked him out." So now when I watch someone

telling a story to a child, I look at him and think, "Are you SURE you understand?"

Those children LIKED school. I had to lock the schoolroom door, or they would have been with me for breakfast. I lived in a company house and the desks were put in the front room. I would start dinner and keep an eye on it between lessons. When I arrived, it was a new house and I had no equipment for cooking. A neighbor loaned me a chafing dish and I cooked everything including cake and pie in it, by moving it every so often from underneath to the top and vice versa to cook both top and bottom. Then I acquired a hot plate and another neighbor loaned me an oven from an oil stove. Unfortunately it overlapped the stove with an air space all around. The first day I intended to bake a potato, but after an hour it was still firmly resisting the heat, so the next day I put it in earlier and I won. It wasn't exactly fluffy, but I ate it.

I had five grades including I and IX and I dictated five spelling lessons at once by having the five books open on my desk and reading the words to each grade in rotation. They caught their word as it went by, so to speak and they got very expert at fielding them.

Well, that is what September reminds me of. What about you ?

Eloise.

FROM THE OFFICE

The proposed prize list for the next Salada contest is as follows. Detailed

instructions will be mailed the branches as soon as available :

1. Ladies' hand-woven skirt with border pattern
2. White tablecloth 52" x 70", embroidered in colored cross-stitch
3. Original landscape in oils 16" x 20"
4. Ladies' cardigan sweater, knitted with mohair in pattern, one color only

Bonus — doll dressed in bridal outfit.

51st ANNUAL CONVENTION QUEBEC WOMEN'S INSTITUTES

The 51st Annual Convention of QWI was officially opened, June 23rd, 1965, by the President, Mrs. J. O. Ossington, who warmly welcomed the usual enthusiastic group of delegates from many branches. As this is International Co-operation Year, the theme, "Team Spirit", was most appropriate. Greetings to the QWI were extended by Macdonald College, and by the several groups with which QWI is affiliated. All wished us success in our convention and in our work throughout the coming year.

The high point of the Convention was the presence of our National President, Mrs. P. Matheson, and the opportunity afforded many of our members to meet with her during the sessions, or at the reception held in her honour. Her gracious presence added much to the gathering and will spur all members to read carefully about her WI responsibilities in the Federated News.

All members had been looking forward to the presentation of plays as part of the Drama project, and they were well rewarded by the excellent production of "Come Live in My House" by Pioneer, and "Midnight Fantasy" by Ayers' Cliff. The third play by Lennoxville unfortunately had to be cancelled due to illness in the cast. Professor Morrison of Macdonald College was asked to adjudicate the plays which he did most ably, judging Midnight Fantasy to be the more polished performance. Professor Morrison gave valuable hints on dramatic productions which will be of value to those branches who will be working on plays for the next few months. It was decided that the Drama Project should be continued and the counties chosen to take part next year are Mississquoi,

Compton, Gatineau, Rouyn-Noranda, Shefford and Vaudreuil, with Missisquoi as chairman of the project.

Fine reports were given by our representatives to ACWW, to FWIC, and Affiliated Societies, and by Provincial Conveners. From some reports it is evident that many branches do not realize that the QWI has a wealth of information on many topics, in the Pamphlet Library. Pamphlets are catalogued under convener headings (Agriculture, Home Economics etc.) and may be borrowed from the QWI Office at any time. A dull program scares away members; get a list of the pamphlets available, use them as helps to good program material.

A brief report on the Leadership training Course showed that the new approach to leadership training, with emphasis on educational rather than craft course, was an interesting experiment — an effort at advanced leadership instruction. The true value of the course will only be known and appreciated as those who attended extend their new knowledge to other members.

Institute Projects are progressing well, and all delegates were again reminded of the importance of Pennies for Friendship to the ACWW, of continuing support of Coupon #367 for assistance to Northern WI's, of donations to the Hoodless Home for its maintenance, of continued contributions to the Lady Aberdeen Scholarship for continuation and expansion of the excellent advances made in international education. While all branches support our own WI projects first, many also assist in local or community projects. These local donations are usually made directly by the branch to the organization in question, and QWI therefore has no accurate record of amounts raised and expended by our members for worthwhile causes. It was urged that each branch treasurer keep a list of all monies contributed to outside organizations (school equipment, prizes, fairs, sunshine baskets, homes, hospitals, parks etc.); and in her annual report to the County Treasurer, the Branch Treasurer could state the total amount so distributed to these causes.

The Convention was full of interesting moments, of friendship and fellowship, of inspiration and progress. Dr. Dion, in his address of welcome stated that the QWI is a potent social force in the community where it operates: all who attended Convention would return to their branches with renewed dedication to keep Institute ideas and ideals alive and flourishing.

Thursday evening there was a panel discussion which turned out to have a humorous side when the subject of the marketing of eggs came up. The

panellists were Mr. R. Barrette, Dept. of Agriculture (Home Economics Div.) Quebec, and Mr. D. MacMillan, Agro-nome for Compton County.

The convention ended Friday forenoon with the election of officers. The Executive remains the same, three Provincial Convenors elected are: Welfare & Health — Mrs. P. A. Nadeau, Ste. Godefroi (Bonaventure), Agriculture — Mrs. T. E. Zimmer, Brownsburg (Argenteuil), Education — Miss Elsie Graham, Grenville, R.1 (Argenteuil). Mrs. W. R. Parkes, Richmond, is replacing Mrs. D. Scott as Recording Secretary. Mrs. Scott resigned because of ill health.

WINNERS OF SALADA CONTEST 1965

PLACE MATS —

Mrs. Robt. Gill, Ste. Anne's WI

QUILTS —

1st — Mrs. Clarence Pease, Cleveland, WI

2nd — Granby Hill WI

3rd — Mrs. Jack Smith — Dalesville-Louisa WI

CROCHETED BEDSPREAD —

1st — Mrs. J.R. Walker, Marci WI
WI

2nd — Mrs. M. D. Blue, Sawyerville,

3rd — Mrs. H. Jones, Waterloo-Warden WI

3rd — Mrs. E. Drummond, Belvidere WI

KNITTED AFGHAN

1st — Mrs. M. Morency, Ste. Anne's WI

2nd — Mrs. E. G. Prinn, Harwood WI

3rd — Mrs. J. Fontaine, Granby West WI

3rd — Mrs. J. R. Walker, Marci WI

SET OF 3 APRONS —

3rd — Mrs. Percy Miller, Wakeham WI

2nd — Mme. A. Vallière, Val d'Or WI

1st — Mrs. E. G. Prinn, Hardwood WI

HOWICK W. I. MEMBERS WORK AT CENTENNIAL PROJECT.

Visiting tourists from as far away as Ohio and Alberta stopped at the Bridge St. Triangle in Howick one summer night, wondering what those Quebecers were doing. They saw women, some gray-haired, one bare-footed, spading, raking and finally planting and watering a bed of bright red salvia. We assured them we were all respectable members of Howick Women's Institute, helping to complete a project started by the local Council.

Last year, the WI approached the Council, offering to back any efforts made to improve the appearance of the Village, and suggesting that a good

place to start would be with the "triangles". There are several triangles in town, small islands of land formed where the highway curves. Unless attended to, these triangles can become quite unsightly, and detract greatly from the charm of the village. They spoil the first impression of the town for visitors, and are a permanent reminder to townspeople that "something should be done".

The Council agreed with the improvements suggested by the WI and as their part of the project, cut two dead trees from one triangle, covered it with several loads of earth, and erected a flagpole. We hope a good grass job will be done next year but in the meantime flowers brighten it, and the weeds are under control.

Involved in the work were Mrs. Arthur Kerr, President Mrs. J. J. Peddie, Treasurer, and a flower committee, Mrs. M. Scoble, Convener of Agriculture, and Mrs. J. Crawford, all Howick W.I. members. Mr. A. Simon, son of a member of the Cercle de Fermières noticed what the ladies were doing and gallantly finished the spade work. The second night Mrs. R. Mailloux, president of the Cercle, and several young people joined forces with the W.I. ladies and finished the clean-up job on the plot, cut the weeds and grass, and placed whitewashed bricks around the flower bed. (The President of the WI whitewashed more than five dozen bricks and brought them to the plot in her truck!) Everyone had a lot of fun!

We have made a good beginning on our Centennial project, and will see the plan through to completion. We believe, where numbers help, other beautifying projects might be carried out in a similar way. Let us all take a good look around — let us help the Councils and centenary committees to make our towns and villages more beautiful, before 1967.

*Mrs. James Crawford
Howick W.I.*

FROM HERE AND THERE

The Mary Stewart Collect — 'let us take time for all things' — in Silozi, the language of the Barotse people of Rhodesia, Africa :

"Zelueza kaufela lulieze lusina kacimacima -"

From Oregon, U.S.A. a member sent this to The Countrywoman: 'Family Life Updated'. — 'Our grandparents had to put up with 'Housework' whereas we are blessed with 'homemaking'; 'having to scrimp' is now called 'budgeting'; 'being in debt' is 'installment buying'; quarrelsome children' are exhibiting 'sibling rivalry';

'nosy in-laws' constitute 'intrafamilial sharing'; and 'knowing you can't win' is just 'marital adjustment'.

New members for ACWW — (I love the sound of these faraway places) — Puerto Rico, Swaziland, Cook Islands, Sikkim, Sarawak, Granada, Kuwait...

And a display by the English WI's showed the three steps used in organizing a branch. We would do well to try it.

1st — Call on non-members and leave literature

2nd — Call a meeting of interested women

3rd — Organize the branch

I am afraid we haven't really tried the first step.

A poem from Ireland:

OUR W.I.

When I was young and newly wed
My friends and neighbors duly said:
"Now you be smart and resolute,
And join the Women's Institute.
Twill help pass many a dreary hour,
And strengthen your domestic power."
But I, in turn, was horrified,
Was I to be transmogrified?
The Institute was for the OLD,
And I still young and gay and bold.
But then, in time, I weakened some,
And said, "All right, tonight I'll come."
I pictured all the nice old dears,
With clicking tongues and listening

ears,

All caught up with their knitting trend,
Domesticated to the end;
But now I think it should be said,
My pre-conceived ideas soon fled.
Though some were old, yet lots

were young,

And all were lively, and full of fun;
While home and children played

their part,

They talked as well of clothes and art.
And speakers from all arts and parts
Beguiled their way into our hearts.
So, older now, and wiser too,
I'd welcome any member new,
And tell THEM they are destitute
WITHOUT the Women's Institute.

APPLE GROWING (Continued)

has been considered impractical for North America where skilled but cheap labor is not available, the researcher says. "Yet the European results show that it is not the age of the trunk that determines whether or not a tree is past its prime, rather it is the age of the wood or branches which bear the apples."

More research is needed to tap the full potential of the new pruning technique and to chart the best planting arrangements. But work carried out in orchards since 1959 indicates that the

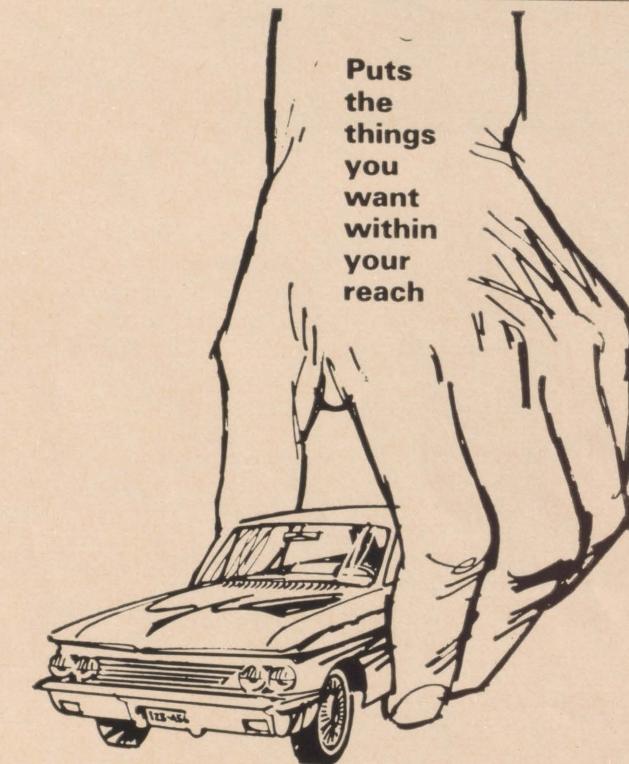
trees should be planted at 15-foot intervals in paired rows that are 12 feet apart. Plantings should be staggered between the two rows. In addition, a space of 20 feet should be left for a travel road between each pair of rows.

With this arrangement, 181 trees can be planted on an acre.

At Kentville, seven-year-old McIntosh trees with a spread of 12 to 15 feet yielded as much as 10 bushels of apples and indicated that per-acre yields of 1,000 bushels or more can be expected within a few years after planting. The trees were on Malling-Merton 106 rootstock.



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THE COLLEGE PAGE



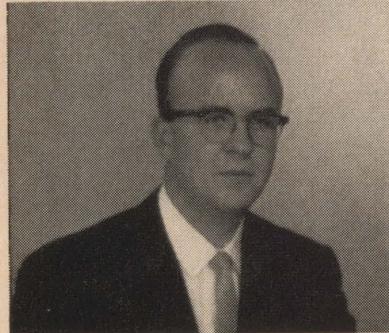
VISITORS AT MACDONALD

On August 2nd a group of eighteen Agriculture Specialists from U.S.S.R. visited Macdonald College. This was one of their stops during a tour which took them to several parts of Canada.

During the summer months several hundred children visited the campus. Many of these were on organized tours or in groups sponsored by associations.

Several groups of 4H and Junior Farmers visited the College, on one day over 200 4-H'ers were here.

Visitors are always welcome.



APPOINTMENT

Mr. Donald Wild recently joined the Administrative Staff of Macdonald College as Assistant Registrar. In his new position Mr. Wild will be responsible for the operation of the Registrar's Office in its modified role designed to serve the Faculties of Education and Agriculture including the School of Household Science.

Mr. Wild has been teaching at Knowlton High School for the past seven years where his special fields have been English and History. A graduate in Arts from McGill University,

Mr. Wild took his Education Training at Bishop's University following three years employment in business administration.

Mr. Wild, his wife Joan and their two children, Christopher 4 and Jennifer 3, are residing at 29 Maple Avenue. It is indeed a pleasure to welcome the Wilds to the Macdonald community.

LEADERSHIP WORKSHOP

The Students' Council will again sponsor a Workshop at Mont St. Hilaire on Sept. 10-11-12. This Workshop is for 21 students who will serve on the Student Council and in other college positions of responsibility for the coming College Year.

This group will study parliamentary procedures, group leadership and other topics of the same general interest. There will be an opportunity for the students and resource staff to discuss leadership problems.

Three Senior Home Economics students will do the catering for this group, while they are at the Galt Chalet on Mont St. Hilaire.

DR. KLINCH, VICE-PRESIDENT OF CANADIAN SEED GROWERS

Dr. Harold Klinck of the Agronomy Department at Macdonald College was nominated Vice-President at the 61st Annual Meeting. This meeting of the Canadian Seed Growers Association was held in Charlottetown in July.

One hundred commercial seed growers attended this meeting. Dr. Klinck has been active in this association for many years.

CONSERVATION COURSE

A special conservation course for Boy Scouts has been offered this past two months at the college. The course this year was organized by Dr. V. R. Vickery. Lectures and field trips were given by Dr. Gus MacKenzie (Soil Science), Professor R. S. Broughton (Agricultural Engineering), Mr. J. D. MacArthur (Forestry Conservation), and Dr. Vickery (Entomology).

SUGAR PARTIES GALORE!

While the 1965 season was not the best maple season at the college, this didn't detract from the very popular sugar parties offered in the Morgan Arboretum. The two biggest parties, the Morgan Arboretum and Woodland Development Association and the McGill Graduates Society party, attracted a total of 2700 visitors. The Graduates Society alone consumed 58 gallons of new syrup.

LYMAN MUSEUM EXPEDITION

During the month of August Mr. W. Hoek and Mr. J. E. Lovrity travelled to Mexico to collect insects for the Lyman Museum. They went to collect Syrphid flies for genetic studies by Dr. Boyes, Department of Genetics of McGill University. A Volkswagen van was equipped as a travelling laboratory. This is the first full-fledged Lyman Museum expedition.